USER VIEWS OF CSI IMPLEMENTATIONS

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A

User Forces Driving CSI

American business enterprises are increasingly relying on information systems support to not only maintain profitability (or cost effectiveness in non-Federal government segments), but, in some cases, to sustain themselves. Forces, both external and internal, now impinge on the organization at a growing rate and demand change in the support environment.

While the external and internal forces are interrelated and can become indistinguishable, the external forces (e.g., competition, regulation/de-regulation, etc.) require a reaction while the internal forces represent opportunities. Accordingly, the urgency of the change requirements may be more intense when the forces are primarily external and the reaction assumes more of a defensive posture. The urgency of pro-active, offensive-oriented changes that result from internal forces may be more a function of affordability.

The focal point of the planned investment (i.e., near-term or long-range) is a key to the customer's perceived value of the project and provides the vendor with a benchmark for project pricing. The kinds of forces and their impacts are described more fully below (see Exhibit 1).

1. Environmental Forces

The environmental forces differ between for profit companies and not-for-profit organizations. The former are beset with forces (e.g., competition, regulations) that may impede their ability to achieve or maintain profitability, while the latter are pressured for efficient support systems in response to additional requirements stemming from new regulations or in response to tighter public funds. These efficiency issues are discussed under internal forces.

In the for-profit organizations, the competition is, first of all, more intense due to the sheer number of competitors.

- The de-regulation of industries, for example, has given companies to

new markets. Financial services, once the province of banks and savings and loans, are now offered by insurance companies and retailers. Telecommunications carriers are moving into manufacturing and information services.

USER FORCES DRIVING CSI

- More and Better Competition Demands an Organized, Rapid Response

- Integrate the Organization's Infrastructure

- Realize the Benefits of the Investment

- The current balance of trade deficit bespeaks the number of foreign entrants into U.S. markets.

- To grow the top line and, hopefully, the bottom one as well, in a slow growth economy, corporations are becoming more diversified. Manufacturers are moving into retail, service companies are moving into manufacturing, and so on.

Not only is there more competition, but it is better competition. Discounts, special offers, and the like are introduced on a seemingly daily basis. To win – even compete effectively – businesses must rely on their ability to automate and manipulate the competitive variables. The competition in airlines' frequent flyer programs and interest rates on credit cards are just two examples of attempt to seek the competitive advantage.

Finally, the basis of competition are not static, but constantly changing. Rapid process change to gain a competitive advantage is now very frequent.

In short, to compete in the market, organizations are now relying on information systems that integrate the organization, operations, customers, and technology suppliers.

2. Internal Forces

At the same time there are internal forces that compel organizations to seek changes in their information support systems. Users are looking for savings that will accrue from more efficient systems that perform more of the work of the organization.

Customers are looking for cost savings that will accrue from a more efficient system that does more of the work of the organization. Organization management do not feel that they are fully benefiting from their investments in information technology. One reason is that these companies have not completely developed the infrastructure and architecture to achieve their business goals. They have yet to complete the integration of products into systems and then focus these systems on processes to achieve their business goals.

There is increased emphasis throughout the organization on making better use of the equipment already installed. Management is demanding a demonstration of the bottom line impact of the systems, products, and services. They want to see the strategic applications of hardware, software, and communications.

But, they are too often focused on solving old problems. Over the years the installed suite of information systems has become obsolete. While still functional, these systems do not afford the opportunity to grow with the ever increasing demands of the business. Speed, volume, and flexibility have become key issues. For example, software that has become heavily patched over its life is now difficult to maintain. And, migration paths to future technologies are non-existent.

- The growing body of end users has placed an emphasis on the real time availability of information contained within existing networks and systems and in the interconnection of these systems.

- As the end user community grows, so does the demand for local capabilities and the need to provide end users with applications that are easy to understand, use, and maintain.

- A part of the issue here is productivity. By moving the systems and support from a centralized information service to the point of work, management hopes to avoid some of the non-productive time spent searching for resources and duplicating the efforts of others.

- With many previous efforts done piecemeal as a quick response to pockets of automation, major SI projects are almost a reaction. Customers want to consolidate these previous efforts into a consistent whole.

While the specific application targets are as varied as the number of organizations undertaking major projects, there are some common threads (see Exhibit 2).

- Customers are looking for integration of applications among multiple vendor hardware. This need is particularly important as organizations begin to consolidate products, systems, and processes.

EXHIBIT 2

CSI OBJECTIVES

- Integrate Multi-Vendor IS

- Disseminate Management of Technology

- Develop Flexible Systems

- Establish Connectivity

- Better databases, responsive systems, and flexible decision support are sought. Management and ownership of the technology is being disseminated throughout the organization. In this scenario, the IS department is the in-house utility for integrating data and communications throughout the organization.

- A key benefit sought by these SI efforts is future expansion capability. The new system should be open-ended and not leave organizations at the same dead end place the older systems did. The ideal system will also benefit the organization by being easier to maintain and easier to modify so that the cost benefit does not denigrate as rapidly.

- Organizations with network integration projects generally have environments that include multiple resources in multiple physical sites and a need to utilize these resources via access from any of the sites. For example, a university contains many computer facilities housed in various departments. Students and faculty want to access the computer resources from their classrooms, offices, or living quarters. Frequently the communications are multi-media: voice, data, graphics, and/or image (e.g., educational cable television in the campus environment).

B
Preparing for a Solution

1. The Project Decision

The problems with the old system or procedure become recognized throughout the corporation. Usually there is not a single advocate but a "ground swell" of recognition. At some point, depending on the style of the organization, the issues become documented and are passed up through managers. At each step, if the manager feels a higher manager needs to be involved, the issues are recast and sent to the next manager. Because of their size and criticality, CSI-type projects eventually reach the executive ranks.

New start agendas may come from within the user community (e.g., users requesting on-line access to non-existing corporate databases) or from the executive ranks (e.g., acquisitions, mergers, new products or lines of business, etc.). In either case, the IS executive and/or the chief operations executive becomes the focal point deciding whether user requests should be recognized or how executive requests can be implemented (see Exhibit 3).

EXHIBIT 3

PRELIMINARY STEPS TO AN SI DECISION

- Recognize the Problem

- Establish an In-House Task Force

- Contract with a Consultant

- Conduct Feasibility Study

- Prepare Specifications

- Prepare Report

- Recommend Approach

- Seek Approvals

Generally, the decision to undertake a major development effort is made at the highest levels of the organization. Typically, this is a committee of the CEO, an operations executive who takes the lead in the effort, a chief information manager who acts as procurement officer, and a chief financial officer who may be a supporter, but is not a buyer.

The managers who decide to invest in a development effort are usually the first to outline requirements. The "Catch 22" of this is that, since the project has become a focal point of top management, many requirements are included at their request even though they may be secondary to the mission of the system. The functional requirements, even at the outset, may be very unrealistic.

Typically, the next step is to operationalize this top management directive through an in-house task force charged with the responsibility of assessing the problem, identifying alternative approaches to a solution, and preparing a preliminary cost/benefit statement.

- The task force is usually composed of representatives from senior management, the in-house IS organization, and the end user organization. A planned mix of disciplines (financial, operations, engineering) is likely. While senior managers control the task force, the details of the functional specifications are left to a task force composed of the other members. Frequently, senior management establishes ground rules both in terms of the scope of the project (systems to remain intact, systems to be developed, interfaces required, costs, time frames, approaches, etc.).

- In some instances, the in-house development group has developed such a bad reputation for delivery that they are specifically excluded from the task force.

- The task force frequently relies on the efforts of non-competitive companies in similar industries as a source of information. It is not atypical for one organization to approach another to get guidance on the approach taken, results, suggestions, and even possible vendors.

  - After establishing some preliminary specifications, a consultant may be brought in to work with the task force in conducting a feasibility study, recommending project direction, and developing the first draft of the functional specifications.

  - While contracting with a consultant may be a competitive process, in most cases it is not. The selected consultant is typically known and frequently used by the customer. This consultant is selected because he or she knows the client's culture and support environment and the customer feels the consultant will present an objective position that is in the best interest of the customer.

- It is frequently the case that the consultant is retained as the customer's representative throughout the selection, contracting, and implementation processes. This is especially true in situations where the customer has little expertise (e.g., a complicated network acquisition) or lacks the staff (e.g., state and local government).

- In non-government organizations, this consultant is free to bid on the job as well. Because of conflict of interest issues, this practice is less common – but does occur – in state and local government.

• There can be problems, even at this step. In one case, the in-house organization did not like the consultant's methodology. They threw out the results and spend a considerable amount of time on a second effort using their own methodology.

Because individual projects take place in an on-going environment it is sometimes difficult to slow down planned implementations that will dictate the future course of the specific project. Hardware required for other purposes may be acquired according to some planned schedule and be incongruent with the thrust of the project.

The work of the task force or consultant results in functional specifications of the desired system(s). Functional, as opposed to technical specifications, are specified as customers believe that to achieve the "best solution" customers must turn away from technically-oriented acquisitions in favor of functionally-oriented ones using outside contractors to guide and shape the ultimate solution. Because an integrator's knowledge becomes a competitive tool in bidding on functionally-oriented specs, the client not only benefits from the knowledge of what is possible through the synthesis of technologies, but receives the integrator's best possible price.

2. The SI Decision

A key decision made by the task force, or in some cases, the consultant, is the selection of the "best" approach to take to realize the solution. The decision to take an SI-type approach hinges on many factors (see Exhibit 4), some of which may be political or personal and never fully understood by the vendor. In this research, customers with SI projects mentioned the following reasons for selecting this approach.

Some clients feel that SI is not new in concept but rather a different approach to achieving the good solid project management and design that in-house organizations have been unable to achieve since projects have, typically, not been well planned, managed, or executed.

In many instances the problem requires and/or the customer desires a unique solution. When this unique solution involves multiple components, it makes sense to customers to place one vendor in charge of the

EXHIBIT 4

SI DECISION FACTORS

- Achieve a Well-Planned, Managed, Executed Project

- Create a Unique Solution of Multiple Components

- Establish "One-Stop" Shopping

- Share the Project Risks

- Cover In-House Lack of Expertise

- Establish Vendor Alliances

effort and make that vendor responsible for integrating the components into a transparent whole.

- As the number of technological approaches to an information system problem increases, so does the risk that a given system will not achieve its full potential at a reasonable cost due to problems with standardization, interoperability, and compatibility. An SI contractor reduces that risk.

- SI is particularly viable in areas where there is a high payback if the project is successful, but little impact if it is a failure. This R&D-type view is most applicable to new technology areas with low levels of urgency.

Desire for "one-stop shopping" is a frequent decision factor. While few of the projects analyzed for this report involved more than one vendor, it can be the case that an SI approach is taken as a means of limiting the interfaces and risks inherent in contracting with multiple vendors. In fact, this very reason tends to drive customers toward vendors who can "do it all."

The project need not be unique for the risks to be large. If project risks are large, the responsibility of the system can be passed on to the vendor. (The risks associated with the business consequences of a project failure are always with the customer.) The assumption of project risk on the part of the vendor provides incentives to get the right job done right and, from the customer's view, gives some assurance that the vendor will provide his best effort.

The customer may not have the in-house expertise required for the project. Since projects represent cyclical needs, it makes sense to hire top notch people for the duration of a project rather than trying to maintain a stable of in-house experts.

Perhaps the most interesting reason for the SI decision is the desire to establish productive alliances between the customer and his product/ services supplier.

- Clients are frustrated that vendors are offering reworked versions of old, off-the-shelf solutions without appreciation or knowledge of the clients' industry, their culture, or their user needs. They desire to form alliances with vendors to build, on a one time basis, vendor sensitivity in hopes of receiving unique solutions. They view SI as a means of building cooperative relationships that will lead to innovation, especially in mixed vendor installations.

- Some customers would like to think of the vendor as an extension of the IS department's resources. They speak of a "managed partnership" where each has roles and responsibilities. This can, of course, be taken to extremes, as when a client hires a vendor not only to get help on a project but to use the vendor to tutor in-house staff. One company contacted by INPUT expressed this very idea, insisting that the client be the project manager and the vendor an "ego-less" provider of expertise.

  - The ploy is to have the vendor as an extension of in-house resources until such time as the vendor is not needed. For the customer mentioned above, the SI contract is avoided since it means a long relationship with the vendor without the possibility of the client taking over the effort when they are sufficiently trained.

  - In this situation the client starts with control and little technical expertise. When they know more they can shape the project and, eventually, remove the vendor and take over the effort.

- In this partnership, at least from the users' perspective, should be included a technology trade-in program over the life cycle of the system to ensure that technology does not out pace project development.

  - Naturally, vendors balk at this approach. It is not so much an "ego

trip" as a protection of salable capabilities. A better strategy may be to shift in-house personnel to strategic roles and leave the technical expertise to the vendors. Clients can use their time to examine the costs and benefits and evaluate the tradeoffs. In this way they can act as the business manager of the operation.

- Users would also consider, and in some instances are practicing, joint development efforts in which the vendor markets the new product and the client gets royalties.

- This partnership is designed for the long-term. Vendors may become impatient if they don't see early payoffs. A requirement of this partnership is disclosure of directions on the part of vendors to ensure that current plans have a planned migration to future developments.

3. The Contracting Process

At intermediate points (see Exhibit 5), in the development of the specifications and the Request for Proposals (RFP) there are project review and approval meetings. It is at these meetings that senior management has an opportunity to review the progress and guide the project with respect to financial considerations. Depending on the style of the organization, the authorized dollar limit of the project manager and so on, the plan may go to the CEO or Board of Directors for final approval. Formal financial reviews are conducted and, if approved, the project is fit into the budget cycle.

If an outside consultant is involved in the early stages of the project, they are most likely to be assigned the development of an RFP. If there is no consultant, the RFP is done in-house. While the RFP may present technical specifications, more likely they are functional in nature. As mentioned above, in SI projects the customer hopes to invite creative and cost effective proposed solutions.

The extent of the solicitation effort depends on the requirements of the customer. In state and local governments the need for competition prompts the customer to advertise the solicitation in trade presses. Non-government companies may want to assess the competition and seek out alternative solution so they advertise in these same places as well as solicit responses from lists of vendors. Frequently, the customer believes that only a few vendors could satisfy the requirements and, in this case, restricts the solicitation.

Many parties show interest in the proposal but far fewer respond. For the cases included here more than one hundred RFPs were mailed by customers in some instances. But bids in these same cases were submitted by less than ten vendors.

The vendor response - customer feedback loop may be "one shot" if the customer receives an acceptable proposal in the first pass. There are

EXHIBIT 5

SI VENDOR SELECTION STEPS

- Obtain Final Project Approval

- Prepare RFP

- Develop List of Qualified Vendors

- Solicit Responses

- Hold Bidder's Conference

- Screen Proposals

- Evaluate Proposals

- Qualify Vendors

instances where selected vendors were asked to re-bid based on the customer's view that the vendor was acceptable but the proposal off target.

- A Bidder's Conference meeting at which interested vendors may ask questions of the customer may be held. Or, individual meetings may be held with each of several vendors under consideration. Only in the case of state and local government are the minutes of these meetings made available to other bidders.

C

Selecting a Vendor

The selection process consists of several steps:

- Screening – Does the proposal meet the minimum requirements of specified in the RFP? Proposals that do not meet minimum qualifications are immediately discarded.

- Evaluation – What is the technical soundness of the proposed solution? Are the associated costs in line with the proposal? With other proposals?

- Qualification – This includes an attempt to learn a little more about the vendor. References are checked, sites are visited, oral presentations are made.

The evaluation process tends to be formal with checklists for rating proposals and even computer programs for scoring individual checklists. In most cases, the final award decision is in the hands of the senior management committee members, some of whom may have participated in the evaluation.

Selection criteria represent the customer's values as much as they do the project requirements. These values and the resulting criteria are discussed below (see Exhibit 6).

EXHIBIT 6

SI PROPOSAL VALUATION

FACTOR	WEIGHT (Percent)
Reasonableness of the Solution	40
Risk Avoidance	
- Experience & Capabilities of Vendor	30
- Project Management Approach	10
Cost	20
Service Orientation	Not Scored

1. "Reasonableness" of the Solution

- The proposed solution evaluation is a critical ingredient in the selection process, typically constituting up to 40% of the vendor's score.

- Customers want to determine if the vendor understands the client's business, the industry, the culture, and the IS environment. Then, they want to determine if the proposed solution is reasonable and workable. Customers quickly reject bids that smack of political cleverness (telling the customer what they want to hear rather than what they need to know) or reflect the biases of the vendor.

  - Sometimes this involves additional questions on the part of the client and second or third bids on the part of the vendor. "Best and final" bids used in the Federal Government have not appeared in the commercial arena but may as the problems and their solutions become more unique.

  - There is a great reliance on the technical expertise of the vendor's marketing personnel. Separating the realistic from the hyperbole of the vendor is tough. Clients have become very weary of "vaporware," the promise that the desired technology will be available "any day now."

  - To avoid empty promises clients ask to see running installations. If acceptable, the client buys the system for starter code and offers a time and material contract to the vendor for development of their unique applications.

  - Some vendors are unable (or unwilling) to work within the constraints presented by the in- place equipment. But, for customers, this is critical, unless the project calls for a complete revision.

  - Live test demonstrations (LTD), while less frequently required, provide a practical means for evaluating proposed solutions composed of different technologies and limiting the risk of attractive, but unworkable, solutions. LTDs also encourage the inclusion of off-the-shelf technologies as they reduce the time lag between demonstration and award.

- Customers also consider the extent to which the proposed solution helps them avoid obsolescence. With technology changing rapidly and major projects requiring several years to complete, there is a good chance that the technology of the proposed solution will be obsolete before the project is completed. Clients seek some assurances that the vendor will not let this happen.

  - A related fear is that of asking the integrator to build a new technology only to find a very acceptable solution commercially available.

- One solution is to use modularized "standard" components that can readily be replaced. This is a means of ensuring a migration path to newer technology as it is developed.

- Another solution is to structure the contracts so that the central core of functionality is likely to have the greatest longevity. A CPU, for example, should be carefully planned to avoid becoming quickly outdated. Peripherals, on the other hand, are more easily replaced and can be upgraded as technology advances.

2. Avoiding Business Risks

Customers seek assurances in the evaluation process that they are not unduly exposed to financial or general business risk. They look at two general items: the experience and capabilities of the vendor(s) and the proposed management approach. Typical weights are 30% of the evaluation and 10%, respectively.

• In terms of experience and capabilities, customers seek some comfort level that the vendor can, in fact, do what they are proposing to do.

• What specific industry and applications experience does the vendor, and the vendor's personnel have? RFP's may call for resumes of key personnel, especially project managers in order to evaluate the experience of the proposed personnel against their own perceptions of the kinds of skills that will be required to successfully complete the job.

• While the type of vendor (e.g., computer manufacturer, telecommunications company, professional services firm, etc.) does not appear to be a key factor, many customers are concerned as to whether the vendor is setting the standards or following them. Clients reason that there is more risk of the project resulting in outdated products and procedures if the vendor is a user of technology rather than a creator.

The major issues involved with project management are whether the vendor has proposed a workable plan and whether there is a track record of on-time, within-budget delivery of similar systems. Of critical concern is how vendors propose to handle vendor-vendor relationships.

• A good reputation for on-time, within budget development is essential. The customer wants to see an ability to carry out the terms of the contract.

The cases included in this report include a variety of vendor relationships including sole source proposals, joint ventures, and prime-subcontractor. Customers generally have no objections to any of these types of arrangements so long as the proposal clearly spells out the responsibilities of the vendor(s), the project management that will ensure the customer is not

caught in "finger pointing" between vendors, and the plan for compensating the customer if the project is not a success.

- To be sure, there are clients who believe that joint bids are the "kiss of death" because of the complexities that are added by second, third, and fourth vendors. Customers with these perceptions seem to be the exception.

Financial solvency, while not scored as such, is another key consideration. Clients with large projects are reluctant to contract with vendors who do not have the financial wherewithal to handle the risk of project failure. For them, it makes no sense to contract with a $10 million company for a $30 million project. Financial statements of the vendor's latest fiscal year are frequently requested in the proposal.

- Customers also attempt to avoid undue risks by imposing performance guarantees on the contractor. These may be spelled out in the RFP and evaluated, but more likely are contract terms negotiated with the winning vendor. In several cases investigated for this report, the customer went so far as to require the SI vendor to guarantee the performance of equipment that was not a part of the SI vendor's contract. For example, in one case the vendor took financial responsibility for a $3 million project even though 50% of the money had been spent by the customer to buy the computer hardware before the project started.

3. System Life Cycle Economics

Respondents reported that the economics of the proposal were secondary to other issues, but in INPUT's opinion this consideration is generally 20% of the evaluation. The focus does tend to be on the upfront implementation costs as opposed to the total life cycle costs or even price performance.

- Cost is an all important factor but is not usually the pivotal one. That is, low cost is a necessary, but not a sufficient condition. This relationship tends to be mitigated somewhat in the state and local government arena where appropriate expenditure of the taxpayers' dollars is under the constant eye of nearly everyone.

- In more than one case customers were not sure what type of contract they wanted. The choice was either left to the bidding vendor or, in one case, both fixed price and cost plus bids were required.

  - Fixed price contracts are generally the rule. Fixed prices help the client avoid cost overrun surprises and give the contractor an incentive to deliver the product at the lowest possible price rather than the highest defensible cost. In only one instance was there a cost plus award and that award had performance incentives included. Penalties for late delivery are the exception but do appear in some fixed price contracts.

- Posting of a proposal bond is usually required with the bid as a sign of good faith and firm bid. This is usually a nominal ($30,000 - $50,000) amount. The successful vendor is also required to post a performance bond that is some percentage (1% - 20%) of the total contract value. This bond serves as a guarantee of delivery, installation, and operation.

An interesting twist to proposed financial relationships is occasionally presented. In this scenario the vendor offers to develop the system in conjunction with the customer at a discounted rate for the rights to market a similar product based on the effort to other customers. Royalties to the original customer are a part of the agreement.

4. Service Orientation

A final, unweighted consideration is the service orientation of the vendor. For the most part the customer desires to establish a working relationship with the vendor that fosters the partnership alliances discussed earlier.

Long-term support is key. The client wants assurances that the vendor will provide training and maintenance for a specified period. When multiple vendors are involved in the project, the respective roles of the vendor in providing support must be clearly delineated. Clients do not want to become party to finger pointing among vendors. This is one of the reasons that clients have opted for "full service" vendors.

D

Managing the CSI Implementation

A key to good management is communication between the respective parties (see Exhibit 7). Both sides must have good communicators and knowledgeable project managers. Team spirit is also essential. When both parties feel they are on the same side, the chances of success are increased.

The customer generally supplies subject matter experts, analysts, and programmers to work alongside the contractor.

The customer is responsible for periodic inspection of the vendor's work to ensure full compliance with the agreement.

The customer must have an ability to make decisions on a timely basis, avoiding the conservative management by consensus that is frequent in large organizations. Only then can the customer keep up with the progress of the project being run by an entrepreneurial vendor who is willing to make rapid decisions.

Prototyping before rushing to production is a key in large projects, although this practice was infrequently observed.

EXHIBIT 7

KEYS TO MANAGING THE
CSI IMPLEMENTATION

- Knowledgable Personnel

- Team Spirit

- Defined Roles

- Decision Authority

- Formal Project Reviews

- Established Testing Procedures

- Defined Performance Criteria

Installation, testing, and acceptance are typical project tasks. The client must control the acceptance testing, conducting a rigorous test that is much more than the formality frequently undertaken. Testing and acceptance, while not as rigorous as in the Federal market, is required and is formal. Generally, the tests are not spelled out in the RFP, but the performance levels are.

E

Unresolved Issues

While user interest in SI-type approaches to large projects [TO] is growing, there are several issues that constrain the market. Because of the nature of the issues vendors may not be able to directly impact them, but should make every attempt to understand them and deal with them indirectly.

1. Cultural Concerns

Clients consider their information processing requirements unique. Clients believe that vendors frequently do not have the level of understanding required of the operations.

18

UNRESOLVED IMPLEMENTATION ISSUES

- **User Perception of Uniqueness**

    - Vendor Can't Know Subtleties

    - Vendor Can't Be Trusted

    - User must Be in Control

- **User Culture is Inflexible**

- **Risks of SI May Be Severe**

    - Business Liabilities Retained by User

    - Change Control Process Ill-Defined

    - Requirements Unstable

- When the development effort is the integration of systems the knowledge base required is so severe as to call into question whether the vendor could ever develop a sufficient level of knowledge to build the interfaces. In large organizations this deficiency can be compounded when numerous operating divisions, each with their own unique systems, are involved. Only the client has the necessary knowledge base of systems in their own user community to form project teams. Furthermore, if these systems are manual, commonalty across organizations is further reduced, frequently to a level of reporting formats and schedules.

- Because of these perceptions of their own uniqueness, clients frequently do not have faith in the ability of outside vendors to come in and solve the problems.

  - Clients with these perceptions feel that vendors' project development is not very good, perhaps worse than the in-house group. In this perceived scenario, the vendor's costs are even more than the in-house group.

  - The cultural bias also dictates that the client not share proprietary information with these vendors whom they do not trust. Part of this attitude seems to stem from the reluctance of the client to show their "warts" to outsiders.

- Clients also have a need to justify the size of their in-house staff. Having a thousand people in systems and then contracting with an outside vendor for a development effort raises questions on the part of management.

- Client organizations frequently have corporate policies prohibiting use of any system for which the client does not have 100% control in terms of maintenance. Under these policies, escrowing the source code, a frequent vendor practice, is not acceptable. Clients fear, among other things, that if the company goes into bankruptcy, the client may never get the code.

- To make SI successful in large organizations that have little experience with outside contractors, there must be a commitment to changing the way the client builds its systems. But some customers with large projects prefer to find a flexible vendor rather than deal with the organization's culture. To receive the level of service desired, some clients opt for smaller, independent firms that need the client to survive and are willing to go the extra mile to maintain a satisfied customer.

2. Risk and SI

Clients are concerned that the financial risks passed to the vendor in the SI project do not offset the business risks to the company for missed schedules. These business risks are never passed on.

- During the bidding process, customers must have a firm understanding of their own requirements to be able to guide the vendors to appropriate responses. Further, for smooth negotiations the customer must know how to manipulate the variables of what they want and when they want it to maximize their position in the negotiations.

- The change control process is one key to managing risk. Unless the vendor and client agree on what is really included in the project and

when the project will be done, contractual hassles can ensue, causing chaos in the client organization. These negotiations may be difficult for sales-oriented vendor representatives.

- Control of resources needs to be clearly established. The vendor is unwilling to assume the risks and responsibilities unless they have control over the resources and the specifications. But clients want to have the ability to make changes. So, contracts that spell out the responsibilities of each party may become difficult to develop.

- User involvement from the start of the project is critical if requirements are to be definitive. Users must feel they are a part of the effort and every attempt must be made to get their input before the specifications are finalized. Nothing threatens a project like a dramatic change in user specifications.